

2017

Just Us

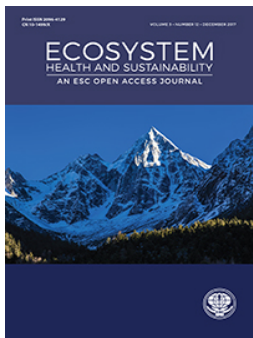
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Just us

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ABSTRACT

Introduction: A thorough understanding of ecology is a necessity as the Earth becomes crowded, there is more intense resource use and exhaustion, and the exposure to pollutants has diversified.

Outcomes: Everyone must be involved as we develop the moral compass and maps for a desirable world. The transition will be made within the context of complex social forces, which must be engaged in purposeful collaboration and action. All individuals have the embryonic need and possess diverse abilities to contribute to the transcendence of problems arising from the human response to social inequities.

Discussion: These will be difficult and nuanced transitions. One example is the Balinese water distribution system, whose site-specific adjustments developed over thousands of years. Examples from country-to-country comparisons show that Eco-civilizations, to be 'civil', must be fair, inclusive, and joyful, and more than about misleading metrics like Gross Domestic Product, individuality, material accumulations and competition.

Conclusion: We are in this together; it is not 'them or us' - it is only 'Us'.

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假作真時真亦假，
無為有處有還無。

"Truth becomes fiction when the fiction's true;
Real becomes not-real where the unreal's real."

Dream of the Red Chamber

Cao Xueqin (Qing Dynasty, 18th century)

"Rivers and mountains may change;
human nature, never."

Chinese proverb

Introduction

"Ecology and Civilization in a Changing World" was the organizing theme of the 12th meeting of the International Association for Ecology (INTECOL) held in Beijing, China. This theme recognized the importance of integrating environment and people. Ecology was expressed as a "useful" global concept at the first INTECOL meeting in 1974 (Den Hague, The Netherlands). Fifty years later, with the intense global pressures on our planet, ecology is now seen as a "necessity" for humanity to address major global and local environmental and social problems. The tone and significance of these meetings of several thousand scientists every four years evolved from being about mostly ecological concepts and data about the natural world in the first meeting, to the whole of all systems at the 2016

meeting in Beijing – which specifically sought to include topics about human societies. Included this year were sessions on art and science, economics, and urban systems which complement the rigorous historical core focus on natural systems. This broader inclusion is essential. In 1974, the inhabitable land area on the Earth was 1.5 ha per capita; in 2016, it was 0.86 ha for everything – cotton, housing, ore, rice, and roads, and to manufacture cell phones, planes, and toilet paper. There may be 0.55 ha per person in 2100 at "moderate" population projections (Figure 1). Urgent action is required to face the increasingly limited space and resources on Earth; an expanding urban footprint; and dwindling human understanding, affinity, and connections with the environment. Humanity is living on the resources of multiple Earths (Rees 2006; Wackernagel and Rees 1996), as though they were two trophic levels away from reality. The unreal is now the real – until it is not.

Future climate changes will further exacerbate the adverse effects of resource use by more and more people as the Earth's arrangements and loss of individual species, its diversity, its habitats, and its ecosystems. We can learn from the organization of food webs – everything is interconnected (Hatton et al. 2015; Haber 2010). We use plastic and put microplastics in the oceans (Lavers and Bond 2017), but we did not intend to. When we eat corn, then we inevitably add to the size of low oxygen coastal zones (Rabalais et al. 2010); when we eat pigs prophylactically grown

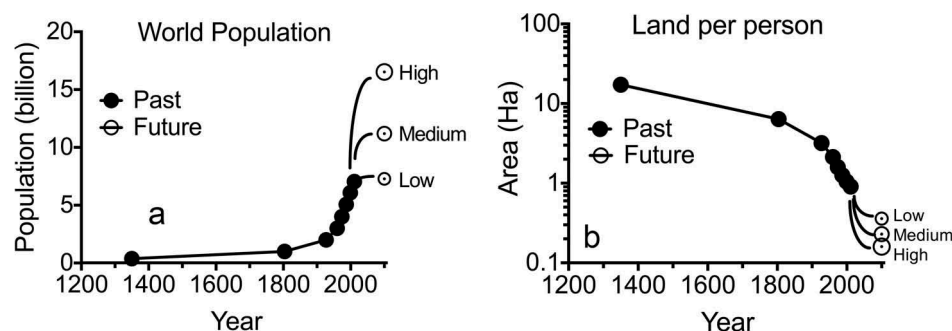


Figure 1. The world population (a) and per capita inhabitable land area (b) from 1200 to present, and the projected increase in 2100. The population data are from United Nations (2017).

in feed lots, then we contribute to a future bacterial outbreak because of the fewer remaining effective bactericides. The brain is 78% water, but we forget that the many things we put on our hair, in our bodies, on our lawns, farms and homes end up in drinking waters (Kasprzyk-Hordern, Dinsdale, and Guwy 2009). The result is that the populations of the world's seabirds are diminished (Paleczny et al. 2015), oceanic food webs are declining (Wiley et al. 2017), and a plethora of natural resources problems have developed or threatened. The interests of individuals and nations are humanity's collective self-interest. But we are seemingly living in a world with an underdeveloped moral compass or adequate topographic maps to discern out how to get there. And so we must become societal navigators and mapmakers.

Transitions

A higher-quality environment is possible and advantageous. Kubiszewski et al. (2017), for example, estimated the monetary value of ecosystem services for four alternative global land use and management scenarios in the year 2050 within 1 km² sized grids for 16 biome classifications. The four development choices were organized along two axes: the individual to community axis, and a policy axis ranging from greater gross domestic product growth to well-being. The range of global ecosystem services forecasted for the four scenarios was a decline by (US) \$51 trillion y⁻¹, or an increase by (US) \$30 trillion y⁻¹. These values are -41% or +24% of the total value of global ecosystem services estimated to be (US) \$125 trillion y⁻¹ in 2011. The switch from the present "market forces only" policy to what Kubiszewski et al. (2017) call "the great transition" into shared governance, stewardship, and social equity is a swing of 64% in global ecosystem services ((US) \$81 trillion y⁻¹). In other words, a focus on environmental and social well-being and sustainability is essential in the governance of sustainable systems.

That transition can only be made within the context of complex social forces, which must be engaged

as a purposeful component of collaboration and action. The human nature may be essentially unchanged, but individual and cultural behaviors morph. Gray and Watts (2017) point out that our human lineages began in small, "kin-based and relatively egalitarian groups," but that today "we live in colossal nation states with distantly related members, complex hierarchical organization, and huge social inequality." The study of cultural transmission and evolution, therefore, is extremely important (Creanza, Kolodny and Feldman 2017) and we need to learn how to develop and use the results of cultural insights to positive action (Foley 2017). The well-being of ecosystems and people will depend on these interactions and developments. This means providing the best scientific evidence to steer various courses toward a sustainable future; this will require firm and committed action by all within the world's environmental, social and economic problems. The longer we wait to take action, then the greater the challenges will be that we face.

Individuals

What about the next 50 years? What can be done by individuals? Consider that we are privileged to be here; be thankful to have aspirations for a better world while living in what sometimes seems to be chaos. Here is a metaphor: A social worker in Quebec hosted a site visit for the 2000 INTECOL Wetland Conference where he told me that there were 22 people compromised by an addictive behavior (Turner 2012). The addiction might be an alcohol, drugs, or sex, and the 22 people were generally those closest to the often clueless addicted person who could not yet confront the reality of the addiction or its consequences or relief. The same empiricism can be used to construct what happens when a positive example ripples through society to reach 22 people in a constructive way. If one is skillful, then it could be multiples of 22. Our human heritage may be an elusive evolutionary mystery to comprehend, but it can be partially known, appreciated, and nurtured.

We cannot know everything, but we can be part of the theater of the human condition, and participate with enthusiasm and authenticity. It is in our blood to do so; it is our genetics to participate as a social animal.

And we are capable of participating well when in cooperative relationships. Ostrom (2009) analyzed conditions in which cooperation between individuals could generate sustainable management systems of a common resource pool, rather than an implosion as it was thwarted by larger policies. The cooperation is partially based on trust and fairness (Cox et al. 2009), and prominent community leaders are of critical importance (Gutiérrez, Hilborn, and Defeo 2011).

Shared governance

Some of the constructive elements will be implemented with the realization of how the sense of a separate self is a deconstructive element – a lie – we are all connected to each other, and to the abiotic and biotic Earth. Bill Rees uses the metaphor of the sinking of the Titanic to remind us that the capsized suites of the few rich and the many in steerage sank just as deeply and to the same depths (Rees 2012). A single molecule of CO₂ released by one individual has the same effect as a neighbor as someone on another planet, and it travels around the world. The mining of phosphorus in one region is a cause of eutrophication in another region where it is applied. Nuclear waste, lasting for thousands of years, is everyone's waste. To protect the Earth, though its processes are imperfectly known – and especially because of those unknowns – we must, of course, treat it with a conserving attitude. But humans can be quite difficult when there is strong sense of individualism, of course. How to have a shared governance can be challenging. How can this be done, in both small and large ways, to create a better, perhaps sustainable, Earth? What would it look like?

Among the examples provided indirectly by social scientists – the historians, anthropologists, and sociologists – and directly from traditional societies, comes this from the Indonesian island of Bali. Bali has a water distribution network dependent on seasonal rains whose distribution is dependent on elevation and management. Lansing (2007) wrote an outstanding summary of the linked geology, ecology, and culture of this landscape. The island's social fabric nearly became unglued when the often well-intentioned and technically strong (but naïve) western aid agencies tried to implement a fertilizer-based rice cropping system, while not recognizing the social subtleties built over thousands of years. Bali's water distribution is by a network of canals, tunnels, streams, and weirs, and its availability determines the number and kinds of crops grown and pest

infestation. The pests can be controlled by a combination of drying and wetting fields at a large-scale and by asynchronous planting/harvest rhythms of neighboring fields. Effective water management requires cooperation across all watersheds. Temple priests facilitate multiple gatherings of everyone to attentively deal with the often subtle agricultural and related issues arising throughout society as the available water is allocated throughout the landscape. Lansing (2007) says that “essentially, water temples establish symbolic connections between productive groups and the components of the natural landscape that they seek to control.” A top-down approach for system control is minimized in favor of a bottom-up and integrated social network.

The desire for fairness and equal access is one of the fundamental requirements for sustainability at the personal level and the group level. Wilkinson and Pickett (2009) provide modern examples of how inequalities lead to dysfunctional behavioral results at the national level. These include maladaptive relationships between income equality and social problems, including mental illness, incarceration rates, teenage pregnancy, illiteracy, obesity, drug abuse, and education performance. The lessons of history are that sustainable governance requires strong social equalities. And those lessons also show that eco-civilizations, to be “civil,” must be fair, inclusive, and joyful, and more than about misleading metrics like gross domestic product, individuality, material accumulations, and competition. We are in this together; it is not about “one winner and many losers,” or between “them and us” – it is all of us – “Just Us.”

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